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SEPTEMBER 1942

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#### AVIATION Systember, 1962

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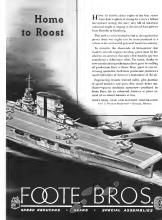
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DEDICATED TO THE WORKERS WHO ACTUALLY BUILD WINGS FOR THE FAGLE

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WITH MAN SHEETINGS IN DESIGN WHITE WAS LONG Corpor in the Delay in America to Clear Boom.





WHEN THE Big Boy LANDS-

When the world's largest bomber, the slighty-two ton B-19, returns to the ground the force of the impact is scrift. Yet this mighty lesishan of the size lands with affortless ease because it is made litting that the B-19 is manipped with Asroli. For they are own-shalmingly preferred by the wristion industry; more Asrolis have been used on planes than any other kind of shock absolving device. Parthermore, they were the force that the contraction of the size o

This principle of operation has proved

so successful that is has been almost universally adopted.

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which they have been entrasted . . . and serves as an incentive toward giving our men on the lighting fronts the finest radio equipment that

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#### UNITED STATES RUBBER COMPANY APPLANCTURE STRATULENT . 4400 C JEFFERSON AVE . DESTON, ANCHOSAN



Approved by the U.S. Army Air Court for controlling lubricating gallersperotore in good flengtage, and design of educths Type D-8. Operation to automatically respective the execut of all passed

YLPHON PRODUC Solely release mechanism automatically throny valve into solety position, parrenting overlapting of the oil in event of AIRCRAFT INDUSTR

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- ments. (Originally 25% new 65% est.). 9. Helps eliminate hazards of loose stone, aggregate, gravel, etc., capting peopellers during
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The new Warthington Abdust "Sons Silver" in cryside . The Popular bear a current sweets of 21 feet 2 modes and at 366 seers per folgow day



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## The Aviation Industry is doing its job... A Year's Production A Week\_Every Week

A MERE heached please a recent in 1935; 200 to the claim weekname to written, place production good on at a size of \$50.00 and \$40.00 and \$40.0

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#### Bombers or Cargo Planes?

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Jeslie E. naille

#### AMFRICA AT WAR

Although no drastic separation from surface forces looms near, air power persixtently is moving up, and an ever-increasing proportion of war material is being forwarded by air carriers to vital military sectors in every part of the world

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A new analysis reveals that Ninnon's current strength and ability to produce aircraft shows danners of underestimating her as a formidable for

#### B. E SDEVED

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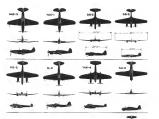
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#### Gliders Joining The Fight Comprehensive alider program contemplates the use of materiass graft

on combat missions and for transport of troops and cargo as well Large-scale pilot and tectical training activities are in progress

American program companes forwables. economistics 33 falbr sourped soldiers

The United States is producing a have at encourses, it is regited, in



Characteristics and three-views of some Red Air Force planes which surprised the Allied Nations as well as Hitler

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### AWAKENING of AIR POWER

American air power is expanding faster than any other air force Although still spread too thin on world fighting fronts to deliver a knockout blow in any one campaign, America's airmen are strikon offenduely and men and engagement have been "tried by fire." Fighting against annieshelping solds on the

nd officers' excendency to best much us

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### Ryan Celebrates 20th Birthday

Rise from barnstorming to quantity aircraft production and army pilot training typifies strupples and growth of the industry

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Many of the lessons learned in the flory air of war will be of ing please to level burshess and trace transports. This machine can distincts any aboless bentus condition as second sound load.

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TAPERED ROLLER REARINGS



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Oute Reynolds 112

The Why of Northree's Engineering Loft Technique

Bomb bey ges tesk installation in the Boxing B-17

North American trains: wing built of low carbon alloy steel. Ratracting leading gear mechanism and Gouge flap of the Short Stir

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Man and Machinery Available for War Work

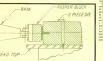
# FORMING EXTRUSIONS BY MACHINE METHODS

This method of precision forming of extrusions in aircraft production accomplishes two vital savings in the war effort-reduction in man hours for a given unit of production and reduction in plant area required for more

BY CLARK COE. Section Successor Co., Sec.



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### Auxiliary Power Vital Today

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By BLAKE REYNOLDS: Clief Apparental Regions, Learness Engineering and Record Corp.

First Generators Wind-down

BOTTOM REAR VIEWS OF ENGINE CONTROLS AND ACCESSORIES CAMPAGICA CONTROL



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## The Future of WATER-BASED AIRPLANES

In this, the fourth in a series on flying boat design, the author maintains that most of the fundamental data of modern hull design is based on complete fallacy. He concludes that the transversely flat planing bottom is the logical solution. Subsequent installments will also have no the reasons therefore.

#### By CAPT FRANK T COURTNEY

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#### AIRCRAFT ARMOR Made FASTER, TOUGHER

Branze process makes face-hardened plate more rapidly by means of carburizing with liquid salts both in an electric furnace under constantly controlled temperatures. plates are subjected to armor prercing tests on company range



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THE NEW KOLLSMAN COMBINATION DUAL TACHOMETER AND SYNCHROSCOPE for twin-engined gircraft

#### The Why of Northrop's Engineering-Loft Technique

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AVIATION September, 1943

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## Machining Oil Ring Forgings

Producing aircraft engine parts on a quantity basis calls for ingenious machining operations to insure precision and perfect finish.

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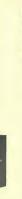
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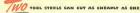
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skill were severely tassed to perform others and tools. PACEMAKER OF AVIATION PROGRESS

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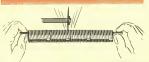
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#### Aircraft Woods PROPERTIES AND SELECTION DATA

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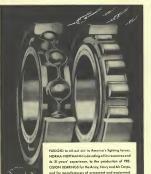
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-because of the little things you don't do?

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Tool Control Machine

destroy marriag and touring are said



#### Wire Rope Connector









Deviations as small as 19002 in our be-

Portable AC and DC Instruments



## DARNELL CASTERS SAVING AT EVERY TURN



Beiere an airpiane takes to its wings, befere a battleship is faunched or a tank comes off the assembly lines, costers and wheels do their part in "keeping 'em relling," Teday's urgent production resultes casters and wheels that can take punishment and assure speed with safety. Welte for PREE MANUAL describing nearly 4000 types of Barnell Casters and Wheels.









VIATION September, 1942

hydraulic Dribvige

Redshikos Markus Gu. P So Chates B. Chorge, III semesters a new Delvius desgaped for holding vork on the table of all types of full grosses, places, they market personnel or market granders, below, and of sons, and their markus. For controlled, and



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Improved Lectro-Sheer
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#### Now You Have

## 19 Sources of Supply for Phillips Recessed Head Screws



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MACRIME SCREWS 24611 MULL, SCREWS -

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AND DON'T FORGET



ABKASIVE, chagging short is reclased two support tested according empares at relatively high alticodes as well as at crossed level. This dust scores recognicion no lucht, highly efficient, easily elemed.

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STAYNEW FILTER CORP.



la Greijar Riar

New Cetalog: Catalog No. 207 on report

AVIATION, Sestember, 1942

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Aircraft Limit Switch



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Philip Curry Mily, Co., Lockhard, Clar Metal -Aviance, September, 1963.

for rack equipment . . . The west importance of radio in engbling shap and ground

crews to maintain inter-communication and the necessity for quick, easy access for servicing and sessing led to the development of the Canada compagne self-afrance connector for rick type "plug-in" countment. Various units of the radio system must be booked up and disconnected with

time and effort. and without disturbing the hun

dreds of small wirer energing essential circuits. Truly 'a quick-change requirements ideally. This is a evoical application of one of the many types of Cannon Pluzs designed for use

and with absolute certainty.

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The John Was Products Committee - which mosts during his

products, teamwork by Lyon's War Products Committee assures time-saving, intelligent action This committee has worked as a team on this highly specialized ich for more than a year. It provides a machical knowledge of War Work requirements that gives time and eliminates false steps

Beady to place the committee's plans into production is one of plants cover an area of over half a million squarefast All operations, including mak-

> So, of your Way Contracts recorn John. ceted metal narte - including despite or development - turn to Lyon for action? men in War Preduction" describing Lyon

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ginners will give you the information



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150 Community, Okso-Eighty year



Jill Preton, Mak-Rubber mera-



AVIATION, Sestember, 194

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for man higher collision, untitales where the six is thinner and the Recent recearch because the eiler from blevides out at those eitheries... bydreulic flyid from frontes solid And recent recently assess of it have in this plant - has nondered synthetic rubber parts that will castinue to operate under these conditiers when endonery synthetic parts loss their flexibility and become

THAT WORK 6 MILES UP

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to high assessed gaseline, or to retain a high tensile in the processes of het ell, er te odhere firmir to stool, bress er obressen Our research steff can halld up a companied from the heat continue. for the job-s custom-roads piece demand especially to meet year We are buck of course, but if it will help win the way, we will find n way to de it.

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-curch-involved concessor wall pasnow being produced to replace available sight now to take care of

-and see how many of your needs

-brack-up roofs and efficient roof into-



LAYER CARPORATION . CH AVIATION, September, 1942





The time-yoult, with its flowless mechanism, protects man's

most valued material possessions. So also America's powerful precision-built aircraft engines are today safeguarding the values that will make the future secure. As the enterway to tomory row opens, we see the tonnage loads of commerce going by air-world progress for which Wright provides the power.



## HERE'S HOW BOOTS SELF-LOCKING NUTS INSURE VIBRATION-PROOF CONNECTIONS AFTER

#### CONSTANT PRESSURE CONTACT PUMINATES AVIAL PLAY

The Boots Self-Locking Nut is a new-purce all-metal case meraker, which is an internal suct of the net. change of ear or hole. Avail thread also is elemented.

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Consider the weight of the Boots all-metal self-lockings ents when trying to save all praportial whethe in de-In addition to the Important and submatful weightsering characteristic, Boots Note have another outstanding subsettants they are all-month which means self-inching efficiency, ilongs Nass "Outlog the Flane."

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RIDOID Ratchet Die

Moster are important now - and this remarkable most and maliable memory No. 11R areas them

for you. Die bonds trush our castly for changing, smor us from either sale, can't full out. Allow steel change close-to-wall threading, so special dies needed, cus smooth perfect threads. Elemental conduct days or reesets, stees %"to 116". Also available in 5-way Die Soocks



#### Work-Saver Ouicker Threadin RIBOID CUTTER of small pipe with this handier

rolls easily through any pipe To these critical does when the

> the ROBBIN Heavy Ducy Carrey offersyou more speed with less ofholds the cuttor wheel soften thir to line it always cars true: 2: pays you to sak for Permate



All recognition for Tools are BIBOID THE BIRGS TOOL COMPANY sold through Sannly Hauses

Pine Wrenches, Cutters, Threaders, Vises

Work-Saver Tools for America's Big Joh in 1942



Flexibility Keynote In New Lightweight Radio Equipment

Electronic Specialty Company of Los Model 204 is a five-tube was operating

Needed Engineering Idea

Exchange



## Airline Outlook Re-appraised

By SELIG ALTSCHUL

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#### TABLE I—NET BOUTY

AVIATION September 1947





Age INST TO CRACK A TOUGH PROBLEM FOR YOU

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This is the strong denot of minimum practical dimensions.

for our as the "frenk joint" on controls where such a feature is an advantage.

For example, with tenant "marries" journal of our

trois in wings or fracinge.

Controls of other parts that may need removal can be builded the state way-me a great string of time and material.

Alternit engineers have been undying such problems as those.

In fact we acknowledge the ready and helpful cooperation of intery of you on perfecting 180,400° 70400005 —strepts, manazed, operative, of ministrates weight and occurs no shelf beyond the breaking strength of the cuble. Write for whatever additional information you desire.





AMERICAN CHAIN & CABLE COMPANY, Inc., BEIDGEPORT, CONNECTICUT



REPUBLIC AVIATION

#### BRITISH NIGHT GUARDIANS

Roulton Paul "Defiants" take heavy toll of German night-raiding bombers



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Military









with the work on both ball and roller bearings. In addition they are labropated PRICTION, the course of burning out, to

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METAL CUTTING TOOLS THE SME LUISING SULTA

#### British Glider Training

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### CHANGING INCO the exmonfaging ... to speed the Nampe's war effort-

Texaco asses error many benefits

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breathain.



HELP WIN THE WALLY STREET, NO SWEET BRUNE PLONETS

THEY PREFER TEXACO

#### MAINTENANCE At CONTINENTAL



Confinental progratus one of the oldest and most mountainous routes in the country. With forty-five daily landings on airgorts ranging from 665 feet to 6.874 feet in elevation, frequently under severe dust conditions, mointenance might be a real operating problem. The new overhaul base at Denver is well enumped to more than handle the job with case

L. WETTENGEL Common As Gard

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#### CATERPILLAR" AND MUEHLHAUSEN SPRINGS Can Take It!

On the lob 24 hours overy day-"Cournillor" built process are engine speeds. Seided within the governor usir, shown at lower left, is one of the mean springs Machibacuco makes for "Caree-

This precision and dependability are the results of close collaboranco between Machibiasses and customer engineers Muchibasses can do the same for you, with springs of even

true - conservation, entersion, nomion or flux - hot or cold formed. For cook action, wire or wire today! MUNICIPALISE SPRING CORPORATION, 740 Michigan Ave. Longsmost Indiana.

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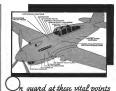
Englisc Overhaul



AND, 5. This pathos and Stepping jug. designed and combinated by Gen. famile paramet, A air stown with abode counter and cultivation

ment or the engine step for playing truckle part organizer shelf sphere





# METALLIC BELLOWS EXTRUDED TUBING

…for Cooling, Cooling Control and Control Instruments. HYDRON throad behavioral setally below as

strongly engine cooling systems, perbureters and supercharaters HYDRON this well extruded tables is used in prestons registers.



AVIATION Sestantion 1942

FIG. 2. A sent family shed is seed for helps and calibrating el-

Instrument Checks

Smaller Bases

cannot bear. Aphrelin purps had purps, alorbox, require pumps





#### Portable X-ray Unit Speeds Field Maintenance

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#### UNITED'S SUGGESTION CONFERENCE

Air Transport

New "wrinkles" and stressing wartime necessity increase effectiveness of nation-wide employees' idea

By FRED A. DENZ. MINES

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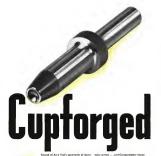


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First And Booms was Cooled



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Of equal excellence, are the many tools. For better teals, for CUPFORGED tools

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#### Airlines Training Army Mechanics



TRACKING of Army resultate medical manners, and Reviscol Done will be

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AVIATION Sestamber 1962

# OPEN SNOW-BLOCKED RUNWAYS



Emain with Walter Spoor Pinhture and wast atmost drafts are too deep, no secons too heavy, no europes of Welter Allrent Prestree Drive. This recorded differentials which proportion the torque to each wheel occardian to its tearties. Every regard of names is chilled at all town under all purples When equipped with the Offset V Front Flow and Sata Wass shown above. Walter Snow Flakters

If m. p. h. This is mony times the secre-clearing creat play "pours" the spow, while the Beto Wing

with Differt Y Don't Flow and

Walter Seaw Fighters are engineered throughout to the appolition work of speed chargeness. The or of America and Canada here rated them the most made. Write at once for detriled literature.

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AVIATION, Sestender, 1962



memorane service dering the stat state of 1912. Following in the letter from Major

General John F. Corry regarding this awards

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ARMY AIR FORCES TECHNICAL
TRANSING COMMAND

he your accomplishments that you have been been been there is an extra least the process of the

will open make to yours to the Law years and published performing managements service desired this

We strive Bosins School of Asmpauties, are indeed record of the Thirteen years of experience in resining pilots, exclusers, esc chanics, technicisms, and mete-

over the world prepared our us by the War Dens rement. Now the urgent need for men trained for war-time aviation redevoted to the war effort. After the war is won we will organize pare men and women for their mercial air transportation that will come when the world

Major Green's U.S.A. knows peace again. UNITED A DIVISION OF UNITED AIR LINES the Pump with a BRAIN



LOWSHIP Dr. Verces 1452 2510.

Incorporation of an actuating "brain" in the basis design of the Dowty Live-Line Pump easilies this nationalically, as required, while countril arrange is auditioned without describeres on conventional accurations, automitte and relief valves.

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Recent increase in production capacity ties; makes it monible to account additional orders on these units

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 Their why leading aircraft magnets musafactures usly on Wilco ARRALEUT.
 Through race than a quarter of a century Wilco has plaquered in the development and mirror precisioning of pitentia and semigiricolos testia parte say meterrita unde Auscher contantifice Wilso purchet spenifich by festing arrent montifestieren ur Wilso. Thermosites El-Mentals unel for arrenth miguse od temperature controls, for compensation in relings regulation and an a variety of arrenth suduring devices.

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with accurate control of invadits as well as termerature. Research dunger will be regreduced at will When the tage-comes to supply the air conditionant needs of the post-When final Victory is west, many mir world, General Electric will be volcable lesson learned in factories. Officerag and Consucroial Befraerstion Department Riversield, N. J.

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Simple, excurse carried is provided too. on They slee having trooning humaners readured through why comes. The pas-

Duel reage is diret sepecity is also pro coled in most Their slow harmy harmers . When the regulator to set at the half-way when we requested to set it the nativest product the party will done use descent a When it is not at full position the gara There are 7 different sixes of gure is the complex. There has all them being becames, with especials reaging from 3.0 gives to 5.0 sector. Each use can be had so fee different handle uples . . . possibles These Thor secting harmons can help YQU to speed riveling operationed than relating elements was timp TOU to speed reveling opera-tions and reduce tallects. Wall glodly savel you beloke date on the which the recent suden made these tooks simply with on your com-position and opphysical of fiers tooks simply with on your com-



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Yakuble "bow-to-door" data on Welding, Rivering and Machining Aluminana contained in these three, brand-new cound monon pictures. Designed to applement texts and oraching, three films are offered for your assistance.

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of tools, entrany compounds, speeds and feeds,

How To Excer Access v. 1200-0. nol. 502.10 200-0. rols. 502.10 How To Naza Ascessive 1000-0. nol. 62.70 200-0. rols. 102.50 How To Macross Ascessive 100-0. nol. 50.70 200-0. rols. 125.50 How To Macross Ascessive 100-0. nol. 50.70 200-0. rols. 125.50 Seed year requests for less re-purbose in Machinesis Contract of Adulton.

Seed your requests for loss or purchase in Assaurus Contrary or Anna 2122 Gelf Rabberg, Perchangly, Prompty and Property Contral Property Seed. if sh type to be equipped with thicycle leading goes to that loved an bendern new in service with the Air Fance, the Palicial AT-18 has been designed to





## PLYWOOD BOMBER Crew Trainer

New Fairchild AT-13, built by Duramold process, is designed to train complete crews as an integral unit. ISLULY TO MEET the send for traver not except for sigilar sensitis end anytup booker crews as a wall, the new persign sensities for bealt trades, pen

ran broades events as a unit, has are Trivoltal ACM2 provides pissue for a Trivoltal aCM2 provides pissue for a such speak, a proposition of the state of the state such speaks, tamons man and maelem greener. Complete intermentations to manifact self resolutions of a laker man bendere pissue are provided in a TLS start, is of T-measured pissue. TLS start, is of T-measured pissue. The start is of T-measured pissue. The start is of T-measured pissue. mention, do true course taken light pepth with limit that seem leaders selffreing nembers. Wing span is 25 ft, in, lungth is 27 ft, 7 ft, and overall leady in 13 ft. Il is the first incorer of the type do be designed with imaginal tending purmode to that found on the board typenow in specifies with the Army Air Terms. Poliferenses data are reduced on the pept for the first that the sleep in "in

GFT. In the 200 mps, clear, the Farehold Al-13 makes pecifics stead—bending attacks. MSAT: their settants by the Dermand process, the terrese tensing of poles coupled, bendember, analysis under specific, Al-13 althous on dentrops mouth smooth by the couple seconds and



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ON Suprambur 1992



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Just two simple steps in all it takes to make a Brannig Black and White print—expanser and development. Yine wasting weshing and drying of peans as a thing of the part with BW. You can have big volume production. of peans out to the exact time of your tracings—eliminating toingstone and

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### TEZUITLAN PRIMARY TRAINER

Mahogany plywood plane designed and built in Mexico for training of that republic's growing air force.

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# Strategic Conservation

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When you want patter sings of colors from undy of components of the hybrid colors. Hum undy officers, and the state of the

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## Operators Solve

### Problems of Expanding Air Forces

Responsibilities of Flight Department at typical contract school outlined maintenance and operating procedure at Hawthorne School of Aeronautics described.

### By WILLIAM D. STROHMEIER

Phylip Department Divisions

Civil Operation and Training



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A simple, inexpensive onswer to wortime transportotion for plants, oir bases and airports. Replaces twelve private cars — using little more gas or rubber than a single automobile.

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HIGH SCHOOL PUGHT SCHOLARSHIP WINNERS



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Technical Instructors Needed

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In one of the Douglas aircraft plants, the small part indicated by the arrow in the photo above is cut with on Airca Cavgraph—out so occurately that it requires no further machining! Similar accuracy is also attained in outtion the larger plates shown. The monnetic tencer follows the template at the right roof the torrises rut three 'K" steel wing terminal plates at one time, produring such a smooth, accurate prime that the pair substances are refiges necessary are priviling the flat sides and drilling the necessary holes.

wital aircraft parts, is an extremely rapid operation. This shoets can be stocked up and out with multiple. tarches to produce large quantities of parts in a short time. And the new Airco "45" High Speed Machine Cutting Tips are increasing cutting speed still furtheror much or 10% on some operations

ing aircraft fuselane frames and mater mounts in a North American Aviation plant in Texas, using Wilson Electric Are Welding Equipmeet. The flexibility of these provinces, their speed, even of control and all-pround convenience, make them a sound choice for the varied requirements of pirrents welding shows Air Reduction's wor-time policy is to help American industry do the touch job we all face. Our nationalds field escissories service and our research facilities on any problem invalving the asyncetylese flame and the electric arc are available.

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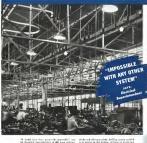


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A straight line is 1000 the shortest distance between two points, BuilDog elepty - with a minimum use of war-curpe materials. They see the rimplest answer to any of industry's

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By BLAIRE STUBBLEFIELD

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Having night mares. Scheklander-cooks American aircraft production be disturbing your Nuremberg nant? You should toss and ture. Schicklaruber, because no man in history has so many free people all sweating

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Scott STEERABLE AND FULL SWIVEL Tail Wheel Assemblies One of the most entenseedy used sail wheel assembles on transers, this Scott development (known as Model ANT-63 or perceived in a water range of perceits, for Acronem and other phases, flavorater light in weight, vos regreed and dependable Taxingva dampeer feature penalties a democratic of the spired amon as present

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This basicy, efficient Scott Assembly (Model CST-12) is standard equipment the lightest tail wheel assembly made—long-time dependabelity is assured by androdust some-motion of each assembly for shock resistance. Deura reduction from discourses former, play all the other force programs also vantages. This Scott contribution to Victory is doily proving its superiority





## Announcement of Critical Importance on the Testing and Installing of Aircraft Hydraulic Units

operations and as much as sixty minutes time in the testing and hydraulic pair is now being employed by the plants of the Donalas Aircraft Commony.

Details of this procedure are presented herewith as a suggesrice toward eliminating sensescessary operations in aircraft additional materials is required.

### DON'T DO THE SAME

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STEAT MELANA A. Lincol Parlamen Che L & Sansa Delan stall fittings for testing. These, too, are multiple operations that in most cases are not necessary.

RECOMMENDATION forturer-ship as many hydraulie units as possible with the

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> > AVIATION September 1967



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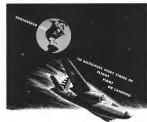
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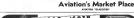
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